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The Flora of Banda Oriental.

BY W. E. SAFFORD, U. S. N.

(Continued from page 149.)

I saw a number of Leguminosæ about to bloom, and collected several species of Lupine, a dainty little Vetch, and a number of compositæ related to the genus *Senecio.* These, together with the *Anemone* and the early bulbous umbellifer mentioned before, reminded me strongly of the flora of the " prairies " of the United States; and I may remark here that there are also certain zoological resemblances between our prairies and the Pampas; such as the occurrence in the two regions of burrowing rodents and burrowing owls of the same genera, and prairie wolves or coyotes.

Continuing our way across the fields, we collected a small *Convolvulus* with finely divided leaves (*C. crenatifolius*, L., Herit.), *Gnaphalium Indicum*, L., an elegant little composite with small white flowers in clusters (*Pamphalea Commersonii*, Car.), and a tiny acaulescent composite with woolly leaves (*Chevreulia stolonifera*, Cass.) On a mound made by leaf-cutting ants I collected a species of Vernonia (*V. Platensis*, Less.) which was not yet in bloom. I saw at least seven species of indigenous Vernonias in the Gibert collection, but none were yet in bloom.

Reaching the brook of Las Piedras, we found growing in the water a large Pontederia (*P. nymphæfolia*, Kunth.) called by the natives "*camalote*"; a large sedge (*Carex riparia*, Curt.), and the common *Typha angustifolia*, L. Around its banks I collected *Mentha aquatica*, L., *Hydrocotyle natans*, Cyr., and *Samolus Valerandi*, L., which is so extensively spread throughout the world; and, near by, the only shrub of the region, *Cestrum Parqui*, which I afterwards found growing on the hillsides of Valparaiso.

I saw great numbers of a small melon-shaped cactus (*Echinocactus*, sp. ?), and of a stiff pointed leaved *Eryngium*, neither of which were in bloom. In places there were patches of beautiful dwarf blue Iridaceous plants, probably species of *Polia* or *Cyprella.* I collected also a peculiar orchid which the natives call the "toad-flower," from its color, which is green spotted with brown; and on my way back to the station gathered a *Lippia*, a *Polygala*, a coarse blue-flowered *Lathyrus*, and a low-creeping buckthorn.

On the last day of October I accompanied the botany class of the National College of Medicine on an excursion to an estancia near Santa Lucia belonging to an uncle of one of the students. Some of the young men were dressed in *gaucho* costume—*ponchos*, or blankets, of guanaco wool, with a hole in the centre through which the head is passed, very loose trousers confined tightly about the ankle, and broad-rimmed hats. Nearly all of them carried sheath knives, some of which were thrust in beautifully embossed silver scabbards, and the saddles of some of the horses awaiting our arrival at Santa Lucia station were provided with large silver stirrups.

The country surrounding Santa Lucia is slightly undulating, although at first glance it appears a flat plain. It is cut up by numerous winding streams of which the banks are thickly bordered by small trees and dense thorny shrubs. On the estancia to which we went, besides large herds of cattle, horses and sheep, we saw a number of ostriches (*Rhea Americana*) feeding on the tender Medicago. We were given several of their newly laid eggs from which very good omelets were made. For this purpose the yolk alone is commonly used; but I had an omelet made of both the yolk and the white, which proved excellent. An omelet made from a single egg was sufficient for five people. I expected to find the flavor strong, but it was as delicate as that of a hen's egg. Ostrich eggs may be bought in the markets of Montevideo, where festoons of the blown shells are also for sale, usually associated with wreaths of blooming aerophyte Tillandsias. These wreaths are very pretty ornaments. The Tillandsias commonly sold are of two species—one with spikes of flowers of a pale canary color, the other with violet flowers surrounded by crimson bracts. Specimens which I took on board ship continued blooming for several weeks. A third species, with large white flowers, called the *Clavel del Aire* (Carnation of the air), was very fragrant. It also continued blooming for a long time, hanging in the captain's cabin.

There were no vegetables raised on the estancia which we visited. While there, our food consisted of mutton, beef, good bread, preserves, cheese and potatoes. I thought it strange that with so many cows no butter was made. The meat was boiled or roasted on a spit over the fire. Our cooks were the men who lassoed and killed the cattle on our arrival. Each meal consisted of four courses: boiled meat flavored by putting grains of maize into the water; soup; *asado*, or ribs roasted over the fire, and coffee. Everybody drank wine, which was a very good quality of claret. In the morning and between meals it was customary to take *maté*, an infusion of the leaves of *Ilex Paraguayensis*, which is sipped from a gourd through a silver tube called a *bombilla*. The gourd is called the *maté*, the leaves are called *yerba*. This beverage is very common throughout South America. It tastes like tea, but has a peculiar bitter flavor, which is not very agreeable to a novice. It is taken very hot, and is usually sweetened with sugar. Frequently, from the scarcity of gourds, or perhaps as a social custom, the same gourd and *bombilla* is passed around; but the custom is not so common as formerly. The Indians of the Pampas are said to be very fond of *maté*. I afterwards saw it for sale in Punta Arenas, Patagonia, and all along the coast of Chile.

I noticed a rancho in process of construction, and it occurred to me that it would be interesting to know of what materials it was composed. The posts, I learned, were made of the Ñandubay, a leguminaceous tree related to the *Algaroba*, which, as I have before remarked, resists decay when buried. All of the posts which I saw were riddled with holes made by the larva of some boring insect. The tree is now becoming scarce near Montevideo. The posts used in building the rancho were each composed of two pieces, the lower of *Nandubay*, which entered the ground, and the upper of *sauce del pais* (native willow), which is very abundant along the banks of the streams. I think the Ñandubay is a species of *Prosopis*: the willow *Salix Humboldtiana* is the only species of the genus indigenous to the region. It is a beautiful tree, the light-green foliage appearing at the same time as the blossoms. We found it in full bloom, and collected a number of specimens of both staminate and pistilate flowers. The roof of the rancho was thatched with *Paspalum quadrifarium*, Lam. The sides were to be of wicker-work of interlacing boughs of the willow. Some of the other ranchos which I saw had their sides made of sod.

A stream called the *Arroya de Canelones* ran through the estate. Like most of the streams of the regions, its channel was very crooked, owing to the flatness of the country. Its margins were bordered by several species of water-plants: Pontederias, Potamogetons and Typhas, and in places I saw some Lemna floating. On the banks grew the beautiful *Salix Humboldtiana*, Willd., covered with a mass of yellow catkins; *Celtis tala*, Walp. (nom. vulg., "tala"), a small thorny tree with smooth white bark, belonging to the same genus as our hackberry; *Lucuma Sellowii*, Alph. DC. (called "mata-ojo," or eye-bane), one of the Sapotaceæ, not yet in bloom, with leaves like those of the Oleander; a small tree called "*Molle*" (*Duvana dependens*, DC.), with inconspicuous flowers, just beginning to open, and with its branches covered with galls; and a beautiful fragrant yellow Acacia (*A. Farnesiana*, Willd.) called "*espinillo*," or "*aroma*," by the natives. This was in full bloom. I gathered a quantity of its blossoms to pack away with clothing in my lockers on board ship. Climbing among its branches was a beautiful *Solanum* (*S. boerhaviæfolium*, Sendt.), with clusters of large pale lavender flowers. I afterwards found this vine in barberry thickets (*Berberis laurina*, Billb.), and with it a bright crimson *Tropæolum* (*T. pentaphyllum*, Lam.), with elegant nodding tubular flowers and delicate five-parted leaves. The effect of the yellow blossoms of the barberry combined with the delicate lavender and the crimson of the climbing vines, was exquisite.

Farther up the stream I collected *Ilex dumosa*, Reiss., and several species of Euphorbiaceæ, among which were *Phyllanthus Sellowianus*, J. Müller, and two species of *Sebastiana*, called by the natives "blanquillo." All of these were scrubby trees or shrubs. I also collected in the *montes*, or copses, along the stream, *Schmidelia edulis*, St. Hil., which is said to bear small edible berries, and *Oreodaphne acutifolia*, Nees., called "white laurel" by the natives from its dark, shining leaves. This, I think, completes the list of the trees of the region which I observed, though I heard of several others which I did not see, among which were two or three species of palms.

While visiting the estancia we drove across the country to the water-works of Santa Lucia, which supply Montevideo with water. The fields were gay with patches of scarlet, white, yellow, blue and rose color, from the Verbenas, Anthemis, Senecios, dwarf Irids and Oxalids, which I had before collected at La Paz; and in places whitish patches of thistles extended for miles. I collected several species of thistles, but, as I had not brought a sufficient supply of paper with me, most of them were spoiled before I returned to Montevideo. I call them all thistles, although they are of different genera, since they are related to one another in structure and habit of growth, and are armed with spines.

A large variegated thistle had just begun to bloom. It was the milk thistle, *Silybum marianum*, Gærtn., and is called by the natives "*Cardo asnal.*" It has large purple heads of flowers, and leaves variegated with a network of white veins. It has been naturalized from Europe, and has also established itself on the Pacific coast of the United States. It is this species which Darwin calls the "giant thistle of the Pampas." *Cynaria cardunculus*, also an introduced species, covered hundreds of acres. In speaking of the abundance of this and the preceding species in some parts of the Banda Oriental, Darwin says: "There were immense beds of the thistle, as well as of the cardoon; the whole country, indeed, may be called one great bed. The two sorts grow separate, each plant in company with its own kind. The cardoon is as high as a horse's back, but the Pampas thistle is often higher than the crown of the rider's head. To leave the road for a yard is out of the question; and the road itself is partly, and in some cases entirely closed."

I noticed two other thistles, neither of which were indigenous—the star thistle, *Centaurea calcitrapa*, L., which has also been sparingly introduced on the eastern coast of the United States, and the *Centaurea lanatus*, D.C. They were not yet in bloom, but the former species had its pretty pointed flower bracts well developed, forming symmetrical stars with spine-tipped rays. Of all the thistles, the cardoon was by far the most abundant. Darwin says that he doubts whether "there is any case on record of the invasion on so grand a scale of one plant over the aborigines." We may well be thankful that it has not established itself on our Western grazing lands.

At the water-works we found a number of plants growing on the rocky banks which we had not observed elsewhere. Among them were a *Cuphea*, a *Scutellaria*, and two new species of Verbena, of which one bore pretty scorpioid racemes of purple flowers with yellow eyes. I also collected specimens of the rank green *Valeriana polystachya*, Smith, of both sexes; a climbing *Mikania ;* a *Smilax*, and a delicate little plant related to the Primulaceæ, with yellow flowers, on slender peduncles, having bearded filaments like *Anagallis*.

I must not forget to mention a pretty blue-and-white *Salvia* which I found growing under bushes ; *Acæna Eupatoria*, a rosaceous plant with the habit of Agrimony; and a Liliaceous plant bearing umbels of white fragrant flowers (*Nothoscordum Sellowianum*, Kunth.), which I afterwards found in Chile. In the Banda Oriental it is called *lagrimas del Virgen*, or " the Virgin's tears."

In conclusion I will mention a few more plants growing near Montevideo which are also found in the United States. Some of them are South American species which have established themselves with us ; others are North American species which have probably been introduced into South America, and it may be that some are indigenous to both floras.

The most abundant are the *Erigeron Canadense*, now of almost world-wide distribution ; *Specularia perfoliata*, Alp. DC. ; *Aster subulatus*, Mich. ; *Solidago odora*, Ait. ; *Bidens bipinnata*, L. ; *Galinsoga parviflora*, Car. ; *Gnaphalium purpureum*, L. ; *Gilia glomeriflora*, Benth. ; *Quamoclit coccinea*, Mœnch. ; *Evolvulus sericeus*, Swtz. ; *Physalis viscosa*, L. ; *Linaria Canadensis*, Spr. ; *Verbena venosa*, Gill. ; *Euphorbia hypericifolia*, L. ; *Senebiera pinnatifida*, DC. ; *Polygonum acre*, Kunth. ; *Mollugo verticillata*, L., several grasses and two ferns, *Woodsia obtusa*, Hook., and *Polypodium incanum*, Swtz.

The presence of two species of *Bauhinia*, which have been described by Bentham, may be interesting to the student of the fossil botany of the United States, as this genus has been found in the Amboy Clays of New Jersey.

U. S. S. " Mohican," Panama Bay, April 23, 1887.